



MECH 2680 Hydraulics section name section credit hours Credits
Syllabus

Course Information

Meeting times and location: section meeting_times section location

Catalog description: This course teaches fundamentals through advanced hydraulic systems used in industry mobile applications. Students will learn industry relevant skills including how to operate, install, analyze performance, and design basic hydraulic systems. Student will learn the operation of advanced systems, equipment installation, accumulators, control, relief and check valves.

Prerequisites: MECH-263.

Terms offered: Fall and Spring

Section-specific Course Description:

Course Level Objectives

Upon successful completion of the course, students will be able to...

1. Students will be introduced to hydraulics and be able to define and give applications of the use of hydraulics.

Students will describe the functions of common hydraulic systems and be able to identify components on the hydraulic trainer.

Students will learn and be able to demonstrate proficiency in operation of hydraulic power unit.

Students will learn and be able to demonstrate the use of various hydraulic connections and fittings.

Students will learn and be able demonstrate the functions of hydraulic cylinders and be able to recognize the schematic symbol for cylinders, single and double acting.

Students will learn and be able to demonstrate the correct use and connection of cylinders and directional control valves.

Students will be able to define flow rates and measurement of flow.

Students will be able to identify various types of flow meters and fixed displacement pumps used in hydraulic systems.

Students will be able to describe functions and demonstrate use of various hydraulic components to include needle valve, hydraulic motors.

Students will be able to draw and interpret hydraulic schematics.

1. Students will learn and put into practice force and pressure calculations relating to hydraulics.

Students will learn "Pascal's Law" and be able to explain it in relation to hydraulics.

Students will learn about fluid resistance with in a hydraulic system and be able to measure Delta P across hydraulic system components.

Students will become familiar with methods of pressure measurement and be able to convert between "absolute" and "gauge" pressures.

Students will learn operation, applications and install various valves into hydraulic systems to include: Relief valves, check valves, flow control valves, sequencing valves, and pressure reducing valves. Student will learn and put into practice how these devices are used to control pressure, flow and speed of hydraulic system.

1. Students will learn and describe the operation and functions of various DCVs and be able to specify application characteristics.

Students will learn and be able to describe function, operation and application of 2-position DCVs, Pilot operated DCVs, and Cam operated DCVs.

Students will learn and cover various types of cylinders, pressure compensated flow control valves, regeneration circuits and synchronization circuits

Required Texts and/or Materials

Industrial Maintenance Mechanic-2nd Edition

13:978-1-305-31669-0

Brumbach Michael E. /Clade, Jeffery A

Cengage Learning

2014

Second Edition

Amatrol LMS seat(Available @ SJC Bookstore)

Required Technology and Software

- Canvas
- Chrome, Safari, or Firefox

Technical Support

Technical support is available through the San Juan College Help Desk 24/7/365. The help desk can be reached at 505-566-3266 or by creating a ticket at [San Juan College Help Desk](#).

For tickets and password reset: [San Juan College Help Desk](#)

For Canvas support information: [Canvas Support](#)

Accessibility/Privacy Policies for all Technology Tools Used

Scroll to the middle of the linked page to view

[Accessibility/Privacy Policies for all Technology Tools Used](#)

Course Requirements

Students will do the following activities:

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- Attend Class at scheduled times and participate in all class activities.
- Students will log in to AMATROL LMS and complete required lessons and quizzes.
- Students will Read chapter 12 in the Maintenance Mechanic Book and take the quizzes in Canvas.
- Students will compile a portfolio detailing all "hands-on " accomplishments with in course..

- Students will take a final exam on last day of course.

COVID Safe Practices for Being on Campus

COVID Safe Practices for Being on Campus

What to do if you have COVID-19 symptoms, are exposed or test positive:

- Do NOT come to campus
- Contact your Instructor
- Complete the COVID Intake Form
 - [SJC COVID-19 Intake Form on SJC Work Order System \(samanage.com\)](https://samanage.com): You will need to scroll back to the top of the screen and click the Request Item button to submit the form.
- The Pandemic Coordinator will review the intake form and contact you with further guidance, including when you can return to campus.

Additional SJC COVID-19 information and resources can be found on the [Coronavirus](#) webpage.

Student Support

Student Services and Support

At San Juan College, we support your academic success and overall health. We know that students often experience a range of stressors that can impact learning and well-being. If you, or someone you know is experiencing mental health concerns, or could benefit from effective academic strategies, there are free and confidential resources available to enrolled students through the Counseling Center. To learn more, visit the [Counseling Center website](#) or call 505-566-3404.

The Student Support webpage provides information on counseling, tutoring, technical support, and many other support services available to San Juan College students.

[Student Support](#)

Academic Support

Academic Support webpage provides information on academic advising, the library, Testing Center, and the honors program.

[Academic Support](#)

Participation and Attendance Policy

Participation and Attendance Policy-Class Attendance and Participation - 25%

Much of the learning occurs in the classroom setting and cannot be made up by only reading the textbook. Attendance, punctuality and participation are essential to your learning so attendance will be taken at the beginning of class and at end of class. Points will be taken off for tardiness, leaving early and not participating in class activities. IF YOU HAVE MORE THAN 5 UNEXCUSED ABSENCES, YOU MAY AUTOMATICALLY FAIL THE CLASS.

4 pt; in all of class and actively participating

3 pt; late by less than 15 mins and actively participating

2 pt; late by more than 15 mins

1 pt; absent with call in, can make up time lost at Instructor's discretion up to 3 pt.

0 pt; absent with no call in, cannot make up time lost.

Inclement Weather Information

Students will receive notification of class delays and cancellations due to inclement weather via the SJC SunsAlert and SJC student email. Face-to-face classes will not meet in person; however, students are advised to check with instructors about alternative meeting options, as some may choose to meet via zoom. Hybrid classes will meet as scheduled via zoom. For questions regarding your class delay or cancelation, please contact your instructor. If you have not already done so, [Sign up for SJC SunsAlert](#) to stay up to date on weather alerts.

Other Classroom Policies and Expectations

- Students must wear Personal Protective Equipment when working in the Maintenance shop and IPOP process area. Appropriate clothing, clear safety glasses, and steel-toed boots.
- Cell phone will not be used for personal calls or messaging in class.
- Conduct oneself in a safe manner, and observe all shop safety rules and Student Conduct Statement.

- This is a flipped course, which means you do all your on-line components, paper work, reading and studying at home.
- At home, Complete lessons and quizzes in Amatrol LMS as assigned.
- At home, Read the Maintenance Mechanic Book and do the Review Questions in Canvas.
- In the Shop, Perform assigned Skills, Activities, and hands-on of the lessons.
- Students will work in groups.
- Practice each 'Skills' as a group, until you are confident you can perform in front of instructor by yourself.
- Perform each 'Skills' in the presence of an instructor to be signed off.
- Team work is very essential in everyday life and work, participate and help your teammates succeed.
- You are expected to have all quizzes/tests ,self- reviews and portfolios completed by assigned dates, Work submitted late will be docked 20%

Canvas Participation and Expectations

Log in to Canvas and complete required assignments by due dates.

Students will be required to participate in the Amatrol LMS and complete assigned lessons daily prior to attendance in Lab

Instructor Response Time

Response time is 24 hours for phone calls and emails. Grades will be entered into Canvas within 24 hours.

Generally response times will be much quicker.

Course Time Commitment

Students will need to spend 6-10 hours each week outside of class on this course.

Class time(face to face) will amount to 14 hrs.-Mon-Thurs. 12:30-4:00 PM

Grading

Final grades are calculated based on the following:

Grading Scale:

A = 93% or higher

B = 85–92

C = 76–84

D = 68–75

F = 67% or below.

To determine final grades use the calculations above along with the table below...

Category Points

Weight

Attendance	60pts.	25%
Skills	10pts.	20%
Quizzes	100pts.	20%
Portfolio	100pts	15%
Final Exam	100pts.	20%

%

Key Dates to Remember

[Full Academic Calendar](#)

Course Schedule

Class will meet MON. -THUR. 12:30-4:00 PM

College Policies

The following information also applies to your work in this class. If you have special needs for campus emergency situations, please inform me immediately.

1. Academic Accommodations - American with Disabilities Act (ADA)

If you believe you need academic accommodations due to physical or other disabilities, you are encouraged to contact Disability Services as soon as possible. The coordinator can work with you to determine eligibility and appropriate accommodations strategies. Please go to your MY SJC portal page, click on Disability Services, and complete all the steps.

You can also contact the college's disability coordinator at 566-3271 or disabilityservices@sanjuancollege.edu. More information is available on the website listed above.

2. The Family Educational Rights and Privacy Act (FERPA)

Refer to the catalog for information regarding [FERPA](#).

3. Academic Honesty Rules

San Juan College expects all students to adhere to the [Academic Honesty Rules](#) as posted online. These are the official guidelines for all classes at San Juan College.

4. Student Conduct Statement

College is preparation for professional opportunities, and professional conduct is expected in courses, including online classes, as well as any written communications, and interactions with members of the college community. As part of our learning community, students are expected to interact and communicate in a mature, respectful, thoughtful, and supportive manner. Students who demonstrate disrespectful, hostile, belittling, bullying or other disruptive behavior will be subject to potential consequences and possible dismissal from the college. The college will take appropriate action when students demonstrate threatening behavior (to others or self). Students should refer to the Code of Conduct in the Student Handbook for additional information.

5. Student Safety

Keeping students safe is a priority, and part of that is ensuring that we have the ability to

communicate emergency messages to you. SJC SunsAlert is San Juan College's Emergency Notification System that will provide you with real-time information about campus closures, extreme weather, and other emergencies through your San Juan College email, text alerts, and phone calls. Should an emergency occur prior to activating your SJC SunsAlert, you will only receive messages through your San Juan College email. To receive a phone call and text alert, you must activate your SJC SunsAlert account and register your phone number. To activate your SJC SunsAlert account, you will need to download the Everbridge App in the App Store or Google Play. Once the app is downloaded follow these steps:

- Open the app
- Click on "Find an organization or subscription" button
- In the search box, either type in San Juan College or 87402
- Click on "SJC SunsAlert"
- Sign on using your SJC email and password
- Once you sign in, you will want to click on "Manage My Profile"
- Click on "edit"
- Include your preferred communication methods.
- Enter your cell phone number in the personal text msg field to ensure you receive text messages.
- Confirm all information (phone number & email) is correct and up to date.
- If you need help with the app, please call John Myers at 505-566-4224 or Kenny Hibner at 505-566-3050.

In the event of an emergency, an SJC SunsAlert message will be sent, and depending on the situation, you will be instructed to do one of the following:

- Evacuate the building
- Shelter in place (Campus doors are locked, and operations continue as normal. During this situation, no one other than law enforcement is allowed in or out of the campus.)
- Lockdown (Campus doors are locked. All operations cease, and you should take cover in your immediate area. No one other than law enforcement is allowed in or out of the campus.)

The Department of Public Safety (DPS) is available 24 hours per day. In an emergency, you can reach DPS staff by calling (505) 566-4444.

6. Non-Discrimination, Sexual Harassment, and Retaliation.

San Juan College does not discriminate on the basis of race, color, religion, sex, sexual orientation, gender identity, national origin, disability, age, genetic, veteran's status, or on the basis of any other category protected under federal, state and local laws. If you have experienced sexual harassment, sexual assault, or any other form of protected class discrimination, we encourage you to make a report. If you report to a faculty member, she/he/they are obligated by policy to share knowledge, notice, and/or reports of harassment, discrimination, and/or retaliation with the Title IX Coordinator. These disclosures include but are not limited to reports of sexual assault, dating/domestic violence, and stalking. You may also

make a confidential report to a SJC Counselor. Please refer to San Juan College's [Title IX](#) site for further details.

San Juan College's Title IX Coordinator is Stacey Allen, Assistant Director of Human Resources/Equity, Diversity, and Inclusion Officer. The office is located at the Educational Services Center Building, 2nd Floor, Human Resources, Room 4243 at (505) 566-3515 or allens@sanjuancollege.edu.

7. Drop for Non-Attendance and/or Non-Participation

Class Attendance and Participation Expectation:

Face-to-Face -- Students are expected to attend and participate in class regularly. Any student missing more than 10% of consecutive class time, (For example, in a regular 15-week class that meets twice a week, this equates to the student missing 3 consecutive classes) without consultation with the instructor may be considered as having abandoned the course.

On-line -- Students are expected to participate regularly and submit all course assignments, based on the course guide definition. A student who does not submit any assignments during a consecutive 10% of the course (1.5 weeks of a 15-week semester) without consulting the instructor, may be considered as having abandoned the course. Logging in does not meet the attendance standard.

Competency-Based Education Classes -- Students are expected to have regular and substantive interactions with their instructor and to actively work on course content. A student who has not submitted coursework, nor had substantive interactions with the instructor over a consecutive 10% of the term, without the instructor's prior approval, will be considered to have abandoned the competency progression. Last date of attendance will be recorded as the last date that coursework was submitted or that the student met with the instructor. For on-line learners, logging in does not meet the attendance standard.

Failure to Meet Class Participation Expectation:

Students who fail to meet participation expectations will have their last date of attendance recorded. This date will be used to recalculate any financial aid received/veteran's benefits received, and the student may be required to repay the institution/government. If the student does not drop the course, an 'X' grade will be recorded. An 'X' grade impacts the grade point average the same as an 'F'.

8. Grading Policies

Incomplete: Incomplete Grade Assignment ([Incomplete Grades Information](#))

The grade of I (Incomplete) is given for passing work that could not be completed during the semester because of circumstances beyond the student's control. Ordinarily, the assignment of an I is given by the course instructor at the time final grades are due.

In no case is an I grade to be used to avoid assignment of D or F grades for marginal or failing work or to require a student to enroll in the class the next semester because work was not completed on time. Circumstances warranting the issuance of an I grade must be beyond the student's control and must be documented on the appropriate form prior to approval.

I grades can be removed only during the subsequent 16 weeks from the end of term, or within the time limit set by the instructor. Removal of an I is accomplished by completing the work in a manner acceptable to the instructor. Re-enrollment in the course under the repeat option does not remove the prior grade of I. Students should not re-enroll for the course. An I not made up within 16 weeks or within the time limit set by the instructor will change to an F grade thereafter and cannot be changed by work completion.

9. Grade Appeals

The policy for grade appeals is in the Academic Catalog ([Grade Appeal Policy](#)).

Student Handbook

The Student Handbook provides information on Student support, student organizations, and San Juan College policies.

[Student Handbook](#)